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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/726,694	12/04/2003	Tom Francke	19200-000026/US	5644

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EXAMINER	
KAO, CHIH CHENG G	

ART UNIT	PAPER NUMBER
2882	

DATE MAILED: 08/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/726,694	FRANCKE ET AL.	
	Examiner	Art Unit	
	Chih-Cheng Glen Kao	2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 June 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-16 and 18-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-16 and 18-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 1 and 20 are objected to because of the following informalities, which appear to be minor draft errors including lack of antecedent basis problems.

In the following format (location of objection; suggestion for correction), the following corrections may obviate their respective objections: (claim 1, line 15, "the line detector unit"; inserting - -respective- - before "line" as exemplified in claim 10, line 15), and (claim 20, line 1, "said line detector units"; replacing "units" with - -unit- -).

For purposes of examination, the claims have been treated as such. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 15, the phrase "optionally" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d). The claim has been examined as best understood by the Examiner as follows.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 3-16, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komardin et al. (US Patent 6175117) in view of Francke (US Patent 6476397).

4. Regarding claim 1, Komardin et al. discloses an apparatus and method comprising a radiation source arrangement for creating a radiation beam (fig. 10, #30) centered around an axis of symmetry (fig. 10, axis defined by #42), which radiation beam is directed through an examination object (fig. 10, #32), and a radiation detector arrangement comprising a stack of detector units (figs. 1-4, #28), each being directed towards a small portion of a trajectory of said radiation beam in said examination object to allow a respective substantially fan-shaped ray bundle of said radiation beam (fig. 1, beams to #40) as coherently scattered (col. 3, line 44) in said examination object to enter a respective detector unit and be detected therein, said detector units are formed and oriented (fig. 4, #28) so as to allow simultaneous recording of coherent scatter imaging data (col. 4, lines 40-44) sufficient to form a plurality of one-dimensional images, each being composed from radiation coherently scattered in said examination object in a respective angle (fig. 1), and wherein detector units (fig. 6a, #28) directed towards different positions (fig. 6a, left and right positions in #32 defined by scattered beams to #40) along the

trajectory of the radiation beam in said examination object (fig. 6a, #32) to allow different fan-shaped ray bundles of said radiation beam as coherently scattered (col. 3, line 44) in different small portions of said examination object to enter said detector units and be detected therein so that a signal from each of said detector units (fig. 4, #28) is needed to form one of said plurality of one-dimensional images (col. 4, lines 40-44).

However, Grodzins et al. does not specifically disclose ionizing radiation and wherein each line detector unit has an elongated opening for entry of the respective fan-shaped ray bundle, a row of individual detector elements arranged essentially parallel with said elongated opening, and is of the kind wherein charges or photons, generated by interactions between the respective fan-shaped ray bundle and a detection medium within a respective line detector unit and traveling in a direction essentially perpendicular to the respective fan-shaped ray bundle, are detected by said row of individual detector elements formed and oriented in a respective angle.

Francke teaches ionizing radiation (title) and wherein each line detector unit has an elongated opening (fig. 7, #9) for entry of the respective fan-shaped ray bundle (col. 12, lines 42-43), a row of individual detector elements arranged essentially parallel with said elongated opening (fig. 6, #47), and is of the kind wherein charges or photons, generated by interactions between the respective fan-shaped ray bundle and a detection medium (col. 5, lines 1-5) within a respective line detector unit and traveling in a direction essentially perpendicular to the fan-shaped ray bundle (fig. 1), are detected by said row of individual detector elements formed and oriented in a respective angle (fig. 7, #9).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the apparatus of Komardin et al. with the radiation and

detector elements of Francke, since one would be motivated to make such a modification to improve spatial and energy resolution (col. 1, lines 50-60) and to lower costs (col. 1, lines 60-65) as shown by Francke.

5. Regarding claims 3, 4, 10, 11, 16, and 21, and for purposes of being concise, Komardin et al. as modified suggests an apparatus and method as recited. Komardin et al. further discloses wherein detector units (fig. 6a, #28) are directed towards different positions (fig. 6a, left and right positions in #32 defined by scattered beams to #40) along the trajectory of the radiation beam in said examination object (fig. 6a, #32), which directions define angles (fig. 6a, beam on far right and far left) with respect to said axis of symmetry in a plane (fig. 6a, axis going from #20 to 28), in which said axis of symmetry and said stack of detector units are located, which angles have the same magnitude (fig. 6a, beam on far right and far left).

However, Komardin et al. does not specifically disclose openings of line detector units being parallel with substantially line-shaped cross-sections of a radiation beam, the row of detector elements of each of said line detector units essentially orthogonal to a plane, in which said axis of symmetry and said stack of line detector units are located, and the detector elements of each of said line detector units are separated, elongated, and directed so their extension lines converge in a respective point in said different small portions, and therefore detect different angular positions of the fan-shaped ray bundle entered into the respective line detector unit so that a signal from each of said line detector units is needed to form each of said plurality of one-dimensional images.

Francke teaches openings of line detector units (fig. 7, #9) being parallel with substantially line-shaped cross-sections of a radiation beam (fig. 7, #1), the row of detector elements (figs. 5 and 6, #47) of each of said line detector units (fig. 7, #9) essentially orthogonal to a plane, in which said axis of symmetry (fig. 7, middle ray of #1) and said stack of line detector units (fig. 7, #9) are located, and the detector elements of each of said line detector units are separated (fig. 5, #47), elongated, and directed (fig. 6, #47) so their extension lines converge in a respective point, and therefore detect different angular positions of the fan-shaped ray bundle (fig. 7) entered into the respective line detector unit so that a signal from each of said line detector units is needed to form each of said plurality of one-dimensional images (col. 11, lines 3-4).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the apparatus and method of Komardin et al. as modified above with the radiation and detector of Francke, since one would be motivated to make such a modification to improve spatial and energy resolution (col. 1, lines 50-60) and to lower costs (col. 1, lines 60-65) as shown by Francke.

6. Regarding claims 5 and 12, Komardin et al. further discloses the radiation detector arrangement comprising a detector unit (fig. 9, #28) arranged in a path of said radiation beam (fig. 9, #30) to measure transmission (fig. 9, #38) through said examination object (fig. 9, #32) simultaneously with simultaneous recording of coherent scatter imaging data (fig. 9, #40).

7. Regarding claims 6, 7, 13, and 14, Komardin et al. as modified above suggests an apparatus as recited above.

However, Komardin et al. does not disclose a gaseous-based parallel plate, avalanche amplification detector.

Francke further teaches a gaseous-based parallel plate (fig. 5, #53), avalanche amplification (col. 1, lines 50-56) detector.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the apparatus of Komardin et al. as modified above with the detector of Francke, since one would be motivated to make such a modification to improve spatial and energy resolution (col. 1, lines 50-60) and to lower costs (col. 1, lines 60-65) as shown by Francke.

8. Regarding claims 8, 9, and 15, Komardin et al. further discloses a device for moving said radiation source and detector arrangement relative to said examination object in two different directions in a plane (fig. 11, #70) orthogonal to said axis of symmetry (fig. 11, axis defined by beam from #20 to 28), while said detector units (fig. 11, #28) are together adapted to record a plurality of images of radiation as scattered in said examination object (fig. 11, #32) in a plurality of different angles (fig. 11, angles created by #70) to thereby produce coherent scattering imaging data sufficient to form a plurality of two-dimensional or three-dimensional images (col. 11, lines 55-63), each being composed from radiation as coherently scattered in said examination object in a respective angle.

9. Claims 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grodzins et al. (US Patent 6442233) in view of Francke (US Patent 6476397).

Grodzins et al. discloses an apparatus comprising a radiation source arrangement for creating a collimated radiation beam (fig. 2a, #10) centered around an axis of symmetry (fig. 2a, axis defined by beam going to #26), which radiation beam is directed through an examination object (fig. 2a, #18), and a line detector unit (fig. 2a, #28) being directed towards a small portion of a trajectory of said radiation beam (fig. 2a, beams including #48) in said examination object to allow a substantially fan-shaped ray bundle of said radiation beam as coherently scattered (title) in said examination object to enter the line detector unit and be detected therein; wherein said line detector unit has an elongated opening (fig. 2a, opening from #50 past #59) for entry of the fan-shaped coherently scattered ray bundle, a row of individual detector elements arranged essentially parallel (fig. 2a, row including #50, 52, 57, and 59) with said elongated opening, the row of detector elements of said line detector unit is essentially orthogonal (fig. 2a, line of #28) to said axis of symmetry (fig. 2a, line from #10 to #26), and the detector elements of said line detector unit are separated, elongated, and directed (fig. 2a, #50 and 58) so their extension lines converge in a single point in said small portion, and therefore detect different angular portions (fig. 2a, #46 at least) of the fan-shaped ray bundle entered into the line detector unit.

However, Grodzins et al. does not specifically disclose ionizing radiation and a row of individual detector elements of the kind wherein charges or photons, generated by interactions between the fan-shaped ray bundle and a detection medium within the line detector unit and traveling in a direction essentially perpendicular to the fan-shaped ray bundle, are detected by

said row of individual detector elements, wherein said line detector unit is a gaseous-based parallel plate, avalanche amplification detector.

Francke teaches ionizing radiation (title) and a row of individual detector elements of the kind wherein charges or photons, generated by interactions between the fan-shaped ray bundle and a detection medium (col. 5, lines 1-5) within the line detector unit and traveling in a direction essentially perpendicular to the fan-shaped ray bundle (fig. 1), are detected by said row of individual detector elements (fig. 7, #9), wherein said line detector unit is a gaseous-based parallel plate (fig. 5, #53), avalanche amplification (col. 1, lines 50-56) detector.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the apparatus of Grodzins et al. with the radiation and detector elements of Francke, since one would be motivated to make such a modification to improve spatial and energy resolution (col. 1, lines 50-60) and to lower costs (col. 1, lines 60-65) as shown by Francke.

Response to Arguments

10. Applicant's arguments with respect to claim 21 have been considered but are moot in view of the new ground(s) of rejection. Applicant's arguments filed 6/22/05 have been fully considered but they are not persuasive.

11. Regarding claims 1, 3-16, and 21, Applicants argue that Komardin et al. fails to disclose, teach, or suggest emphasized features of amended claims 1 and 10, including each stack of line detector units being directed towards a small portion of a trajectory, while Komardin discloses

the positions (fig. 6a, #32 on the left and right) as being along different trajectories and along different beams. The Examiner disagrees with this assessment. The left position, for example, has a stack of detector units (fig. 6a, #40 on the left half) being directed towards a small portion of a trajectory (fig. 6a, #32 on the left). Likewise, the right position has a stack of detector units (fig. 6a, #40 on the right half) being directed towards a small portion of a trajectory (fig. 6a, #32 on the right). Since the claims use the transitional term of "comprising", the claims are open-ended and do not exclude additional, unrecited elements. In this case, the claims do not exclude the unrecited element of a trajectory comprising two separate trajectories. Therefore, Komardin et al. does disclose each stack of detector units directed towards a small portion of a trajectory.

Applicants further argue that Komardin et al. fails to disclose, teach, or suggest emphasized features of amended claims 1 and 10, including simultaneous recording. The Examiner disagrees. Simultaneous recording (fig. 5) is also disclosed as an alternative for reducing exposure to an object (col. 10, lines 1-4). Therefore, Komardin et al. does disclose simultaneous recording.

Applicants further argue that the Examiner has not presented the required "convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the reference." The Examiner disagrees. See the last paragraph of section 4 above, which was also provided in the previous Office Action. Thus, the Examiner has presented the required "convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the reference."

12. Regarding claims 18-20, Applicants argue that Grodzins et al. fails to disclose, teach, or suggest the identified feature of claim 18 of detector elements being separated, elongated, and directed so their extension lines converge on a single point in said small portion, since Grodzins illustrates that the detectors (50, 52) are not directed towards a same small portion of the radiation beam. The Examines disagrees. The two outer detector elements (fig. 2a, #50 on the top and bottom), for example, are separated, elongated, and directed so their extensions lines converge on a single point in a small portion (fig. 2a, on the left side of the object). Likewise, the two detector elements in the middle are separated, elongated, and directed so their extensions lines converge on a single point in a small portion (fig. 2a, on the right side of the object). Since the claims use the transitional term of "comprising", the claims are open-ended and do not exclude additional, unrecited elements. In this case, the claims do not exclude the unrecited element of a small portion comprising different small portions. Therefore, Komardin et al. does disclose detector elements being separated, elongated, and directed so their extension lines converge on a single point in said small portion.

Applicants further argue that the Examiner fails to provide a convincing line of reasoning for combining Grodzins et al. and Francke. The Examiner disagrees. See the last paragraph of section 9 above, which was also provided in the previous Office Action. Thus, the Examiner did provide a convincing line of reasoning for combining Grodzins et al. and Francke.

In conclusion, Applicants' arguments are not persuasive, and the rejections remain.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (571) 272-2492. The examiner can normally be reached on M - F (9 am to 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

gk

DAVID V. BRUCE
PRIMARY EXAMINER